



Leadership in Energy and Environmental Design

Leadership in Energy and Environmental Design (LEED) platinum certification is the highest level of the U.S. Green Building Council's rating system. The council is a nonprofit organization that certifies environmentally sustainable businesses, homes, hospitals, schools, and neighborhoods through their LEED Green Building Rating System.

The LEED Green Building Rating System promotes the expansion of green practices and education around the world through the creation and implementation of universally understood performance criteria. LEED is a voluntary, consensus-based rating system for developing high-performance, sustainable buildings and incorporates a holistic approach that integrates all phases of design, construction, and operation. Categories include building design and construction, interior design and construction, building operations and maintenance, neighborhood development, and homes. LEED emphasizes state-of-the-art strategies and certifies buildings according to the sustainability of the site, water efficiency, energy use and impact on the atmosphere, materials and resources, indoor environmental quality, and innovation and design. A building can also be recognized for exemplary performance or innovation.

The Fernald Preserve Visitors Center received its platinum certification on September 20, 2008, making it the 93rd platinum project in the United States, the first in Ohio, and the second for the U.S. Department of Energy (DOE). DOE's first platinum-certified building was the National Renewable Energy Laboratory Science and Technology Facility in Golden, Colorado. LEED experts from that project assisted with the initial development of the Visitors Center.



The Visitors Center was certified under LEED New Construction Version 2.2 and received 53 out of a possible 69 points in the following areas:

Site Planning: 10 out of 14 points

- Fernald's site history as a former uranium processing facility qualifies it as a brownfield reclamation site (land previously used for industrial purposes that had some level of hazardous waste or pollution and has the potential to be reused once it is remediated). The building was originally constructed as a warehouse for a \$170 million waste treatment and packaging facility. More than 90 percent of the existing structure was retained as part of the new Visitors Center, and was 1 of 2 buildings that were not razed as part of the \$4.4 billion site cleanup of the former uranium processing facility.
- Bike racks and showers for cyclists encourage environmentally low-impact transportation.
- Preferred parking is available for hybrid cars.
- 77 percent of the building landscape was restored using native or adaptive plantings.
- Rain gardens are used to capture and store storm water from the parking lot and rainwater from the



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Visitors Center. Native plants and animals use the water, and the plants passively clean it before it soaks into the ground.

- Light-colored roofing material on the building reduces heat island effect.
- Light pollution was reduced by keeping way-finding illumination close to the building, lowering the height of parking light fixtures, and directing light downward.

Water Management: 5 out of 5 points

- Native and drought-resistant plants were used in the landscaping to eliminate the need for irrigation and to reduce topsoil runoff. The native plants also encourage animal and insect ecosystems, which reduce landscape maintenance labor.
- High-efficiency water and plumbing fixtures reduce water usage by 41 percent. Low-flow, dual-flush toilets use only 1.1 gallons per flush for liquids and 1.6 gallons for solids. The urinals use 0.5 gallons per flush. A biowetland near the building uses plants, microorganisms, and natural interaction with the environment—sun, soil, and air—to process 100 percent of the wastewater generated by the Visitors Center.

Energy: 13 out of 17 points

- A ground-source heat pump system heats and cools the building. Coolant circulates within a closed-loop system, and a heat exchanger is submerged 14-feet deep in a 1-acre lake with a temperature that stays between 50 and 60 degrees Fahrenheit year-round.
- All electricity is purchased using renewable energy credits. The credits come from renewable, sustainable sources like organic materials, hydropower, geothermal power, wind, and solar power.
- Energy usage is 48 percent less than a comparable building constructed without using LEED platinum standards.

- An independent agency verified all building systems and guaranteed proper operation and energy efficiency at startup. All systems were reverified after a year of operation.

Material and Resources: 8 out of 13 points

- 75 percent of construction waste was recycled or salvaged.
- 23 percent of the construction costs were spent on recycled content material, including carpet, ceramic tile, gypsum board, acoustic ceiling tiles, and landscape seating.
- 43 percent of material costs were spent on supplies sourced within 500 miles of the building.
- 51 percent of wood-based materials were made of recycled content.
- Rapidly renewable materials were used.
- Building occupants recycle paper, cardboard, metal, plastic, and glass.

Indoor Environmental Quality: 12 out of 15 points

- Most of the building has natural light and views to the outside.
- No odorous or irritating building materials were used.
- Low-emitting adhesives, paints, carpets, and furniture were purchased.
- Heat-producing rooms (copier and audiovisual rooms) are equipped with external ventilation systems.
- Carbon dioxide monitors are used in densely occupied areas to increase ventilation when required.
- The use of specialty entry grids, special cleaning, and separate chemical storage areas reduces indoor chemicals and pollutants.
- Lighting and thermal systems are personally controllable and set to reduced levels by occupancy sensors.





Innovation and Design: 5 out of 5 points

- On the summer solstice, the sun rises over the site's on-site disposal facility and aligns with the axis wall that cuts through the building.
- A green cleaning program is used at the building.
- Performance in the "Innovative Wastewater Technologies" category is exemplary, with 100 percent of wastewater being treated to tertiary standards in a zero-discharge biowetland.
- Performance in the "Site Development, Protect or Restore Habitat, Integrated Landscape Program" category is exemplary. The area has been ecologically restored, and wildlife habitat has been created with plantings of native or adaptive vegetation.
- The Visitors Center's Green Building Education Program includes educational exhibits, signage, and outdoor displays. The exhibit area in the building traces the site's history from 12,000 BC to the present.
- A LEED-accredited professional was responsible for the project.

Natural Resources

A building's environment has a profound impact on our natural environment, economy, health, and productivity. In the United States alone, buildings account for:

- 72 percent of electricity consumption
- 40 percent of raw material use
- 39 percent of energy use
- 38 percent of all carbon dioxide emissions
- 30 percent of waste output (136 million tons annually)
- 14 percent of potable water consumption

Green Building Benefits

Environmental

- Enhances and protects ecosystems and biodiversity
- Improves air and water quality
- Reduces solid waste
- Conserves natural resources

Economic

- Reduces operating costs
- Enhances asset value and profits
- Improves employee productivity and satisfaction
- Optimizes life-cycle economic performance

Health and community benefits

- Improves air, thermal, and acoustic environments
- Enhances occupant comfort
- Minimizes strain on local infrastructure
- Contributes to overall quality of life

U.S. Green Building Council

For additional information on the U.S. Green Building Council, go to www.usgbc.org or visit the regional chapter at www.usgbc-cincinnati.org.

Fernald Preserve Visitors Center

Owner: U.S. Department of Energy Office of Legacy Management
Cost: \$6.6 million
Area: 10,800 square feet